Claims

We claim:

1. A stabilized phenolic resole resin composition comprising a phenolic resin and an effective stabilizing amount of an ortho ester.

2. The stabilized phenolic resole resin composition of claim 1 which also contains a solvent selected from the group consisting of aromatic hydrocarbon solvents, ester solvents, and mixtures thereof.

3. The stabilized phenolic resole resin composition of claim 2 wherein the stabilized phenolic resole resin composition comprises a polybenzylic ether phenolic resin prepared by reacting an aldehyde with a phenol such that the molar ratio of aldehyde to phenol is from 1.1:1 to 3:1 in the presence of a divalent metal catalyst.

4. The stabilized phenolic resole resin composition of claim 3 wherein the phenol used to prepare the phenolic resole resin of the stabilized phenolic resole resin composition is selected from the group consisting of phenol, bisphenol, o-cresol, p-cresol, and mixtures thereof.

5. The stabilized phenolic resole resin composition of claim 4 wherein the aldehyde used to prepare the phenolic resin of the stabilized phenolic resole resin composition is formaldehyde.

6. The stabilized phenolic resole resin composition of claim 5 wherein the ortho ester is selected from the group consisting of triethyl orthoformate, trimethyl orthoformate, and mixtures thereof.

7. The stabilized phenolic resole resin composition of claim 6 wherein the amount of solvent in the resin composition is from 20 weight percent to 80 weight percent based upon the weight of the phenolic resin composition.

8. The stabilized phenolic resole resin composition of claim 7 wherein the amount of ortho ester is from about 0.1 weight percent to about 1.5 weight percent based upon the weight of the phenolic resin.

9. The stabilized phenolic resole resin composition of claim 6 wherein the phenolic resole resin of the stabilized phenolic resole resin composition is an alkoxy-modified benzylic ether phenolic resole resin and the catalyst used to prepare said resin is a divalent zinc salt.

10. A foundry binder system comprising the phenolic resole resin component of claim 1, 2, 3, 4, 5, 6, 7, 8, or 9 and a polyisocyanate component.

11. A foundry mix comprising:

A. a major amount of an aggregate; and

B. an effective bonding amount of the binder system of claim 10.

12. A process for preparing a foundry shape which comprises:

(a) forming a foundry mix as set forth in claim 10;

(b) forming a foundry shape by introducing the foundry mix obtained from step (a) into a pattern;

(c) contacting the shaped foundry binder system with a tertiary amine catalyst; and

(d) removing the foundry shape of step (c) from the pattern.

12. The process of claim 11 wherein the tertiary amine catalyst is a gaseous tertiary amine catalyst.

13. The process of claim 12 wherein the amount of said binder composition is about 0.6 percent to about 5.0 percent based upon the weight of the aggregate.

14. The process of claim 10 wherein the tertiary amine catalyst is a liquid tertiary amine catalyst.

15. The process of casting a metal which comprises:

(a) preparing a foundry shape in accordance with claim 12;

(b) pouring said metal while in the liquid state into and a round said shape;

(c) allowing said metal to cool and solidify; and

(d) then separating the molded article.